**Introduction**

Extracorporeal membrane oxygenation (ECMO) is a life-saving measure for severe respiratory (veno-venous ECMO [VV-ECMO]) or cardiac (veno-arterial ECMO [VA-ECMO]) failure. Heparin-induced thrombocytopenia (HIT) is a special concern in these patients because ECMO uses a modified cardiopulmonary bypass (CPB) resulting in continuous exposure to artificial surfaces and unfractionated heparin (UFH) over several days to weeks, compared to CPB in which these exposures are for only a few hours. In addition, most of the patients undergoing CPB do not have underlying systemic inflammation and have a normal platelet count at the time of first exposure to UFH. It is possible that patients receiving ECMO are at higher risk of developing HIT compared to patients having CPB. The prevalence of HIT in adult patients receiving VV-ECMO is unknown.

We determined to ascertain the incidence of thrombocytopenia and the reliability of pre-test probability score (PTPS) in predicting HIT, in patients receiving VV-ECMO or VA-ECMO compared to CPB. Differences in the PTPS of patients on ECMO compared to patients who received CPB and the effect of HIT on 30-day mortality in ECMO patients compared to patients who did not have HIT were also assessed.

**Methods**

This was a single centre retrospective study of patients undergoing CPB (median 4.6 [2-16.5] hrs. or receiving ECMO for ≥ 48hrs (median 71 [3-42] days. HIT screening was performed in all patients who showed a typical pattern of platelet drop in first 5 to 12 days after exposure to UFH with or without thrombosis. A citrated blood sample and a completed PTPS (4Ts) were collected from all patients prior to a screening test for HIT antibody performed on an ACL TOP500 analyser using Hemosil HIT-Ab (PF4-H) kit (Werfen UK). Those with positive HIT screening had confirmatory testing by ELISA (HYPHEN BioMed, France). Clinical data were collected from electronic records. From January 2016 to April 2018, 296 ECMO patients (142 VA-ECMO, 156 VV-ECMO) and 2998 CPB patients were studied.

**Results**

CPB patients were older than the patients who received ECMO; mean age (standard deviation) for EMCO and CPB were 45.4 (±15.6) and 64.9 (±13), p< 0.00001. A significantly higher proportion of men had CPB (71.3%) and ECMO (58.5%) than women, P<0.0001.

Thrombocytopenia was divided into mild (platelet count 100-150x10⁹/L), moderate (50-99x10⁹/L) and severe (<50x10⁹/L). Table 1 demonstrates the percentages of patients in ECMO and CPB.